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# MEDICAL STATISTICS;

CONSISTING OF

## ESTIMATES RELATING

TO THE

## POPULATION OF PHILADELPHIA,

WITH ITS

## CHANGES

AS

## INFLUENCED BY THE DEATHS AND BIRTHS,

DURING

TEN YEARS, VIZ. FROM 1821 TO 1830, INCLUSIVE.

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BY GOUVERNEUR EMERSON, M. D.

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EXTRACTED FROM THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,

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# MEDICAL STATISTICS;

CONSISTING OF

## ESTIMATES RELATING

TO THE

# POPULATION OF PHILADELPHIA, &c.

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SINCE the publication of the views in relation to the medical statistics of Philadelphia, presented in a former volume of this work, a new census has been taken and other data offered, which admit of an extension of the investigations to a further period—the commencement of the last year. The results developed by a continuation of the calculations, are of a highly interesting nature. Among them the most striking are, the increased rate of mortality within the last ten years, from epidemic causes that have but recently subsided, and the correct ratio of deaths for the coloured population, which, for reasons previously explained, was necessarily founded in some measure upon assumed data. Added to the time contained in former estimates, our calculations now embrace a connected series of twenty-four years, namely, from the year 1807 to 1830 inclusive.

### *Population.*

As a proper prelude to our inquiries, we present an abstract from the recent census, so as to show the number and description of inhabitants included within the built parts of the town, and from which the returns of interments are made. For the information of those unacquainted with the municipal divisions of Philadelphia, it may be useful to observe that the city proper, or that portion under the controul of the mayor and councils, embraces but about one-half of the population of the whole town—the limits of the original incorporation

having been overrun in various directions. The parts subsequently built, instead of being united to the original incorporation, are formed into several distinct districts, each invested with corporate privileges.

An act of the state legislature, however, extends the provisions of the Health Law over the whole, so that the districts, as well as the city, have their representatives in the Board of Health. Those who attempt calculations of the comparative mortality of Philadelphia, without a precise knowledge of the districts which make returns of their interments to the Health Office, must necessarily be led into erroneous conclusions. For should the sum of the annual mortality be compared with a less amount of population than the returns of interments are made from, the ratio of deaths must appear greater than it actually is, and vice versa, should the contrary circumstances prevail. Gross errors, from such causes, for the most part, have already been committed by persons at a distance, and circulated very extensively both in this country and in Europe. Some of the publications alluded to have represented the mortality of Philadelphia as exceeding that of the other principal cities in the United States, whereas it has been shown to present as low, if not a lower rate than any one of them; we mean under ordinary circumstances, and in the absence of those epidemic visitations to which all places are subject.

Reckoning the whole population for the city and county, without reference to distinction of colour, the total amount is 188,961, of which number 90,332 are males, and 98,620 females. Adopting the distinction, the whites amount to 173,345, the blacks to 15,616. The increase of the entire population within the city and county conjointly, since the year 1820, is 51,864, being in the ratio of 37.8 per cent. for the whole period, or an average of $3\frac{1}{4}$ per cent. per annum.* The white increase estimated separately amounts to 49,599, or 40 per cent. for the ten years, being at the rate of about $3\frac{1}{2}$ per cent. per annum. The increase of blacks alone for the ten years is 3732, being at the rate of about $31\frac{1}{2}$ per cent. or $2\frac{3}{4}$ per cent. per annum.†

But it is that portion of our population embraced within the limits of the bills of mortality, which interests us most particularly. This alone is exhibited in our abstract, or table marked A. and amounts

* This ratio, it must be observed, is computed upon geometrical principles, as approaching nearest to the rate at which population ordinarily increases, and not upon the arithmetical usually resorted to.

† Much interesting information relative to the changes and *denseness* of population in the city and county of Philadelphia, may be found in Hazzard's Pennsylvania Register, Vol. 8.

without distinction of colour, to 167,811. Compared with the population existing in 1820, we find an increase of 40.6 per cent. within the last ten years.

The *white* population considered separately, shows an increase greater than the general ratio just mentioned. The total amount is 153,169, and the increase during the ten years is 41.6 per cent. Estimating the sexes separately, there are 73,547 males, and 79,622 females, so that the last exceed the first in the ratio of 8¼ per cent. or in other words, there are about 100 females to 92 males.

We find the ages of each of the sexes distributed into thirteen periods, commencing with those of and under the 5th year, then giving the number between the 5th and 10th, the 10th and 15th, the 15th and 20th, the 20th and 30th years, and so on to the most protracted periods of life. On comparing this division with that adopted when the former enumerations were made, it will be found to differ very materially, more than double the number of periods being given.

With the whites, the number of both sexes at different ages, compared with the total amount at all ages, stands thus:—All those

| | | | | |
|---|---|---|---|---|
| Of and under | 5 | years, | constitute 14.6 | per ct. of the whole population. |
| Do. | 10 | " | 26.9 | do. |
| Do. | 15 | " | 37.6 | do. |
| Do. | 20 | " | 50.3 | do. |
| Of and over | 30 | " | 28.1 | do. |
| Do. | 40 | " | 14.6 | do. |
| Do. | 50 | " | 8. | do. |
| Do. | 60 | " | 3.2 | do. |
| Do. | 70 | " | 1.08 | do. |
| Do. | 80 | " | 0.28 | do. |
| Do. | 90 | " | about 4.5 | per 10,000. |
| Do. | 100 | " | about 6.5 | per 100,000. |

In the period first marked, namely, that including all of and under the 5th year, the males exceed the females about 5 per cent.* but in that which includes those between the 5th and 10th years, the male excess has diminished so as to be only about 1 per cent.

In the next five years, namely, between the 10th and 15th years, the females exceed the males about 8 per cent. and from this last named period to the 50th year, the excess continues pretty steadily in the ratio of from 8 to 10 per cent. Afterwards, however, it increases greatly, so that

* An examination of the table of births will show that the number of males at birth exceeds that of the females more than 7 per cent.

Between the 50th and 60th yr's, the females exceed the males 34 per ct.
" 60th and 70th " " " 59 "
" 70th and 80th " " " 90 "
" 80th and 90th " " " 79 "
" 90th and 100th " " " 40 "

Of those who had attained and exceeded a century, seven were females and three males.

The *Blacks* constitute about 8.7 per cent. of the whole population within the limits embraced by the bills of mortality. They have increased within the last ten years 28 per cent. or in a ratio of about 2.7 per cent. per annum—a much lower rate than that of the whites.

The whole amount included in our abstract is 14,642, of which 6307 are males, and 8335 females. The disparity between the sexes is therefore far greater than we find in the white population, the excess of females amounting to 32 per cent. or nearly a third. This is partly owing to the circumstance of the services of females being in more general demand in cities than in the country, and partly to the greater mortality of the males. The distribution into periods differs from that adopted for the whites, only six being given, instead of thirteen. The first designated is the 10th year, and the females of and under that age, exceed the males about 5 per cent. In that
Between the 10th and 24th years, the female excess is about 61 per ct.
" 24th and 36th " " " 36 "
" 36th and 55th " " " 16 "
" 55th and 100th " " " 38 "

With the black population, the number of both sexes at different periods of life, compared with the total amount at all ages, stands thus:—

All under 10 years, constitute 21.7 per cent.
" 24 " " 50.6 "
All *over* 36 " " 22.1 "
" 55 " " 5.9 "
" 100 " " 1.7 or nearly 2 per 1000.

Of those that had attained 100 years and over, 14 were males and 12 females. It is curious to observe, that notwithstanding their small numbers when compared with the whites, they greatly exceed the latter in the proportion of their centenarians, and that with the blacks the number of male centenarians exceeds that of the female. From the difficulty which frequently occurs of ascertaining the ages of blacks with certainty, it is possible that more of them are reported among the instances of extreme longevity, than are entitled to the distinction.

*Births.*

In our former publication we were only enabled to present an account of the births for six years. We can now extend the period so as to embrace ten years, namely, from 1821 to 1830 inclusive. As the accuracy of the data upon which our calculations are founded, depends for the most part upon the character of those by whom the returns are made, that is to say, the accoucheurs, we think it proper to premise that the obstetric practice of Philadelphia is mostly in the hands of the physicians. In the last year, for instance, the register at the Health Office contained the names of one hundred and fifty-five practitioners of midwifery for the city and suburbs, of which number only twenty-one were females, the remaining one hundred and thirty-four being regular physicians, of whom some possess a very limited portion of practice, whilst others have a very great monopoly. Of the total number of births for the year mentioned, viz. 7628, the amount delivered by the female accoucheurs was 1061—leaving the balance of 6567 to be divided among the male practitioners. It thus appears that most of the returns of births are made in Philadelphia, by those whose standing for probity and intelligence should entitle their statements to credit. Whether all the births which take place are reported, is, we think, somewhat doubtful, though the number omitted may not be very large. The average proportion compared to the population, is about 4.42 per cent. per annum.

Upon running the eye along the columns of table B. we are struck with the variations appearing from year to year, not only in the totals, but in the respective proportions of the sexes. There is also a considerable deficiency conspicuous in the total for the year 1829, which induced us to suppose that a mistake had been somewhere committed, but upon the most careful examination of the original record, we found the returns complete from all the various practitioners, and were unable to perceive any error in the computation. It is a fact of the highest interest, that although the males at birth for the whole period exceed the females by more than 7 per cent. such is the greater ratio of mortality among them during the first years of life, that at the fifth year the excess of males is only about 5 per cent. whilst by the tenth year it has been so reduced that the excess is only about 1 per cent. Referring to the table exhibiting the population at different ages for the evidences of our representations, we shall not stop to indulge in the speculations which this subject seems to invite.

In consequence of some curious investigations made lately by M.

Villerme, of Paris,* we have been induced to construct a table of the births in Philadelphia for the last ten years, so as to present the amount of each sex per month, (Table C.) This was a very arduous and troublesome task, as from the manner in which the record is kept, we were obliged to refer to the separate statements made by the various practitioners in the respective years embraced by our table.† Having obtained the amount of the births for each of the months in the period mentioned, and calculated their sums, it was next necessary, in order to institute a fair comparison, to equalize them, by making all of the value of thirty-one days. In effecting this, we followed the rule given by M. Villermé, which consists in ascertaining for each of the short months the average number of births per day, and multiplying this sum by thirty-one. By pursuing this process, the following results were obtained, which we arrange in such manner as to give the highest place to the months presenting the greatest number of births, and the corresponding months of conception, which last are seen on the right.

| Month. | Whole No. of Births. | Males. | Females. | Correspond. mos. of Conception. |
|---|---|---|---|---|
| 1. February | 5996 | 3099 | 2897 | May. |
| 2. September | 5965 | 3112 | 2853 | December. |
| 3. December | 5937 | 3023 | 2914 | March. |
| 4. January | 5712 | 3012 | 2700 | April. |
| 5. November | 5652 | 2954 | 2698 | February. |
| 6. March | 5598 | 2896 | 2702 | June. |
| 7. October | 5567 | 2941 | 2626 | January. |
| 8. August | 5437 | 2798 | 2639 | November. |
| 9. July | 5221 | 2764 | 2457 | October. |
| 10. June | 4855 | 2523 | 2332 | September. |
| 11. April | 4805 | 2515 | 2290 | July. |
| 12. May | 4797 | 2503 | 2294 | August. |

It would hence appear that the locality of Philadelphia is subjected to the influence of some causes, which, during a portion of the year, operate unfavourably upon the increase of its population by reproduction. These causes seem to prevail during the extreme heat of summer, and in the commencement of autumn, the months of August,

* De la distribution par mois des Conceptions et des naissances de l'homme. Annales d'Hygiène Publique et de Médecine Légale.

† The sums of births per annum exhibited in this table, will sometimes be found less than those reported annually by the Board of Health. This arises from the rejection of some returns made by the quarter or year, instead of the month.

July, and September, standing lowest in the scale designating the months of conception.

As we are unacquainted with any circumstances connected with the social customs or institutions of the place, sufficient to account for the variation so obvious at different seasons in the births and conceptions, we feel ourselves constrained to adopt the explanation proposed by M. Villermé, who attributes it to the influence, either direct or indirect, of the annual revolution of the earth around the sun, or in other words, to the order of the seasons. It will no doubt be gratifying to the investigator of this novel subject, to have the main conclusion which he has derived from his extensive researches in Europe, confirmed by calculations made in this part of the globe. From an inspection of our statement, it will be seen that its results are in singular accordance with the observation of M. Villermé, "c'est à dire, que les mois de Juillet, Août et Septembre, qui sont les plus chauds, offerent comparée aux autres mois de l'anné, une diminution notable dans la force génératrice." But although the results of our observations correspond thus strictly with his in regard to the *minimum* of births and conceptions, they are found to vary in respect to the *maximum*, as will be seen by comparing our statement with that one of his general conclusions, which asserts that "*toujours et partout*, à des variations près fort limitées, la fin du printemps, le commencement de l'êté, offrent les plus grand nombre des conceptions," &c. As, however, the thermometrical observations made in this locality,* will exhibit a striking difference between the climate and seasons of this part of America, and those of the various parts of the European continent comprehended in M. Villermé's calculations, some difference in the results was to be naturally expected. Should similar investigations be made in other sections of our own country, which from its extent presents such diversity of climate, they will no doubt exhibit corresponding variations in the results, but still, we think, support M. Villermé's leading principle, relative to solar influence upon the propagation of the human species.

Before we conclude our remarks upon this subject, we would invite attention to a fact which perhaps will go further to account for the variations in the number of births existing between the different months, than any other circumstance, independent of temperature.

An estimate made so as to include those three years of the series least affected by the epidemic causes we have adverted to, would present a different order in the months, from one made to include a like number of years most subject to these influences. Let us take for exam-

* See Vol. I. of this Journal, art. Medical Statistics of Philadelphia, Table I.

ple the three last years of our series, viz. 1828, 1829, and 1830—during which the epidemic has been felt much more slightly than during the seven preceding years. Their order when arranged according to the plan previously adopted, would differ but little from that presented by the whole series, and would stand as follows, reckoning all the months to have thirty-one days:—

| Month. | No. of Births. | Corresponding months of Conception. |
|---|---|---|
| 1. September | 2047 | December. |
| 2. February | 1995 | May. |
| 3. December | 1951 | March. |
| 4. January | 1947 | April. |
| 5. March | 1913 | June. |
| 6. November | 1885 | February. |
| 7. October | 1836 | January. |
| 8. August | 1785 | November. |
| 9. July | 1719 | October. |
| 10. April | 1664 | July. |
| 11. May | 1658 | August. |
| 12. June | 1610 | September. |

When, however, we make a similar estimate for the three years, which, from their great mortality, we may suppose felt the epidemic influences in the highest degree, viz. 1823, 1824, and 1825, we find some variation, the months arranged according to the decreasing ratio of births and conceptions taking the following order:—

| Month. | No. of Births. | Corresponding months of Conception. |
|---|---|---|
| 1. September | 1685 | December. |
| 2. December | 1674 | March. |
| 3. October | 1645 | January. |
| 4. February | 1629 | May. |
| 5. January | 1581 | April. |
| 6. August | 1569 | November. |
| 7. November | 1540 | February. |
| 8. July | 1497 | October. |
| 9. March | 1487 | June. |
| 10. April | 1416 | July. |
| 11. June | 1372 | September. |
| 12. May | 1317 | August. |

In this last estimate we see but little change in the situation of the months presenting the extremes, or *maximum* and *minimum* of births and conceptions. We find, however, a sensible diminution in the proportion of conceptions for the months of June and October.

Now in the first of these months we know that the epidemic forms of disease seemed to revive for the season with great force, and continue until October. We therefore think it a demonstrable fact, that in addition to the principal influence which lessens fecundity in this locality, namely, that of high temperature, there has existed during the period embraced by our calculation, another retarding force connected with the late epidemic.

As the results of our observations are in accordance with those obtained by M. Villermé from extensive data procured in those parts of France subject to endemic influences, we do not think it necessary to pursue these calculations further.

We terminate this portion of our investigations with the following general conclusions:—

1. That the chief cause which operates in our locality in retarding the natural increase of the population, appears to be the extreme heat of summer and the insalubrity of the first months of autumn.

2. That another cause which has tended to check fecundity during the last ten years, may be traced to the epidemic influences to which the population of the environs of the town were subjected. This of course is not a regular, but merely an occasional cause.

3. That the prevalence of epidemics or extensive sickness among adults, tends not only to diminish population directly, by increasing mortality, but indirectly, by diminishing fecundity.

4. That upon examination of the births and deaths of particular years, the *maximum* of conceptions will almost invariably be found corresponding to the *minimum* of adult mortality, and vice versa, the *maximum* of deaths agreeing with the *minimum* of conceptions.

According to M. Villermé's investigations, the disparity existing between the births and conceptions of the different seasons is much more strongly marked in the country and small towns than in the large cities. We possess no data by which we can ascertain whether this observation is equally applicable to this country.

### *Deaths.*

The proportion of deaths to the population for the last ten years is exhibited in table D. and proves greater than it has been at any period since regular records of mortality have been kept. The lowest rate was in the last year, (1830,) when it was one death in 42.94 inhabitants, or 2.32 per cent. of the population. The highest degree of mortality occurred in 1823, and was at the rate of one death in 30.5 inhabitants, or 3.26 per cent. of the population. The average of the whole period is one death in 38.85 inhabitants. These estimates are

made without reference to distinction of colour, and exclusive of still-born.

This ratio so far exceeds that of the fourteen preceding years, when it was one year as low as one death in 56.53 inhabitants, and on an average for the whole period, one in 47.86 of the population generally, and only one in about 51 of the whites, that we feel called upon to enter into some investigation of its causes.

Upon referring to the tables accompanying these and our former calculations, exhibiting the annual mortality, it will be seen that in the year 1818 a very sudden increase took place in the amount of deaths. An examination of the tables giving the particular diseases from which these occurred, shows that this increase may be traced for the most part to an unusual prevalence of fevers, inflammations, and bowel complaints, or in other words, to epidemic causes, which were felt with greatest violence from 1818 to 1826, and more especially in the years 1822, 1823, and 1824.* It is a curious fact, that although the same influences which promoted fevers seemed to operate in producing an increase of bowel complaints, the mortality from this last source should not have diminished in a proportion similar to that of fevers, whilst with regard to inflammations there has been a striking increase with the subsidence of fevers. It is possible that the new nomenclature of the physiological school of medicine may have occasioned some of these last to be enumerated with the phlegmasiæ, but the number we are sure must have been

* To make this more apparent, we subjoin the following abstract from the tables. The first years are added for the purpose of showing the ordinary mortality previously to the commencement of the epidemic.

| Year. | Total mortality. | Fevers. | Inflammations. | Bowel compl'nts. | Consumption. | Dropsies. |
|---|---|---|---|---|---|---|
| 1816 | 2225 | 193 | 229 | 153 | 434 | 156 |
| 1817 | 2107 | 211 | 205 | 229 | 349 | 149 |
| 1818 | 2609 | 492 | 195 | 283 | 396 | 171 |
| 1819 | 2979 | 277 | 265 | 363 | 459 | 231 |
| 1820 | 3189 | 526 | 275 | 454 | 446 | 209 |
| 1821 | 2161 | 402 | 289 | 380 | 438 | 194 |
| 1822 | 3334 | 498 | 284 | 461 | 488 | 243 |
| 1823 | 4372 | 744 | 339 | 562 | 536 | 241 |
| 1824 | 4284 | 647 | 402 | 297 | 576 | 221 |
| 1825 | 3539 | 362 | 338 | 362 | 519 | 270 |
| 1826 | 3845 | 421 | 447 | 415 | 587 | 242 |
| 1827 | 3659 | 365 | 481 | 384 | 523 | 219 |
| 1828 | 3971 | 373 | 483 | 429 | 581 | 253 |
| 1829 | 4001 | 260 | 631 | 394 | 638 | 287 |
| 1830 | 3948 | 228 | 505 | 361 | 636 | 281 |

very limited, as may be seen by referring to the particular kinds of inflammation.

In a former number of this journal we took some pains to show that the influence of the sickly air was expended upon that comparatively limited portion of the population living in the environs and outskirts of the town. With these, fever in some of its forms was almost universal, whilst in the more dense and well paved parts, the air seemed unusually healthy, and where remittents and intermittents were met with, they could almost invariably be traced to exposure to night air in the country or suburbs. Never was a stronger demonstration afforded of the resistance made by cities to the influence of country malaria than our late experience has furnished. Great as was the amount of sickness, it was confined almost entirely to the comparatively small proportion of population inhabiting the unpaved or ill-paved environs. Our observation on this and other occasions, has led us to ascribe this exemption for the most part to the pavements, which, by effecting a perfect draining, prevents exhalation, at the same time that it admits of the total removal of vegetable and animal matters, the sources of foul and unhealthy emanations. The chief motive for paving the streets and side walks, is usually convenience, but it has always appeared to us, that by far the most important object achieved by it was the preservation of health.

Whilst upon the subject of public hygiene, we cannot restrain ourselves from noticing another consideration connected with it, namely, ventilation, or a proper supply of pure unrespired air. By far the greatest proportion of the annual sickness and mortality of ordinary seasons is furnished by the narrow and confined alleys and courts existing in various parts of the town. The low terms upon which the small houses and rooms in such places can be obtained, causes them to be literally crowded with a class of population for the most part negligent of cleanliness, and it can occasion no surprize that there should be a great disparity between the proportions of sickness and mortality among these, compared with that which takes place in the portion living in larger dwellings, having a freer circulation of air. The difference just mentioned, though sufficiently obvious in adults, is most lamentably conspicuous among children Notwithstanding the great numbers of these which die annually of cholera, we feel ourselves warranted in asserting that deaths from this disease are rare in houses with large and well-aired apartments. To one who in the capacity of physician to a dispensary or other charity, has been engaged in the arduous duties of attending the poor in their uncomfortable abodes, evidences of our assertions must be abundantly familiar.

The numerous instances wherein the mercenary calculations of individuals has tempted them to put up nests of contracted tenements in courts or alleys admitting but little air, and yet subjected to the full influence of heat, has often induced us to wish that there could be some public regulation by which the evil might be checked. Mankind have inhabited cities long enough to know from severe experience, that there are certain limits to the denseness of population, which when passed, always lead to disease and mortality. As we think every thing tending to the preservation of public health must be a fit subject for legislation, we do not see why a law should not be procured by which the undue crowding of population might be prevented, and the number and size of dwellings adjusted to superficial limits. There are at present municipal regulations intended as a protection against conflagration, by designating the materials of which houses shall be constructed; and if such precautions be deemed so important when property is the consideration, of how much more consequence would be those for the preservation of health and life.

It is common to attribute the greater mortality known to take place under ordinary circumstances in large towns among the poorer classes, chiefly to meagre or unwholesome food and immoderate indulgence in strong liquors. But in this country, where for a part of the year we are subjected to a degree of heat little if at all below that of the tropics, the influence of both these causes in the production of disease, is, in our opinion, insignificant, when compared to that of breathing air that has been previously respired, and which, moreover, is commonly charged with animal and vegetable effluvia. That the same diet and habits of life in the country or small towns, would not be attended with a degree of sickness and mortality corresponding to that found in the crowded portions of large towns, is, we think, beyond a doubt.

In Paris, comparisons instituted between the parts chiefly occupied by such as live at ease, with those inhabited by the poorer orders, would seem to show that the proportion of mortality is regulated less by the density of population, than by the opposite circumstances of ease and poverty.* That this may be the case under the circumstances of climate and means of nourishment which exist there, we will not pre-

* The results of the extensive and extremely interesting researches of M. Villot relative to the changes in the population of Paris, show that the three arrondissements presenting the smallest portion of mortality, namely, an average of one in forty-two of the population per annum, are precisely those recognised as the richest, whilst the three presenting the greatest rate, namely, about one in twenty-five, are noted as the poorest.

tend to deny; but in this country, where absolute want of food, and that of the best kind, is unknown, the evils of poverty we are convinced come from different sources, and more especially from those we have mentioned.

Those desirous of examining into the immediate sources of the mortality of Philadelphia for the four years from 1827 to 1830 inclusive, are referred to table E. which contains the amount from each particular disease, or other cause. We have thought it unnecessary to include the preceding years, there being a similar calculation for them in the tables previously given in this Journal.

An examination of our records of mortality for the last twenty-five years, will show that during the whole time, the number of deaths from *malignant* or *yellow fever* is only about 125. This information may appear strange, even at home; but how much more so abroad, in Europe for instance, where the dread of this disease has alone perhaps deterred many from visiting the country, and raised obstacles to our commerce by the enforcement of vexatious quarantine regulations in many ports. The simple fact we have here stated relative to our exemption from yellow fever, should, we think, entitle our vessels to general pratique, or at least lessen very greatly the detention to which they are so frequently subjected, especially in the South of Europe.

To what this great exemption for so long a period is to be ascribed, and what share of the happy influence has been exerted by quarantine regulations, more general and better paving, with greater cleanliness, are questions it would be very interesting to solve.

The various periods of life at which the deaths occurred, are exhibited in table G. from which it appears that the deaths of such as were under the

1st year, constitute about 48 per ct. or nearly one-half of all those under the 20th year, and
22 per ct. of the mortality at all ages.

2d " " 66 per ct. of all under the 20th year, and about
31 per ct. of the mortality at all ages.

5th " " 81 per ct. of all under the 20th year, and about
35 per ct. of the mortality at all ages.

10th " " 89 per ct. of all under the 20th year, or about
42 per ct. of the mortality at all ages.

15th year, constitute about 93 per ct. of all under the 20th year, and about 44 per ct. of the mortality at all ages.

20th " " 47 " " "

All *over* the 30th year, constitute about 40 per ct. of the mortality at all ages.

40th " " 28 " " "

50th " " 18 " " "

60th " " 11.3 " " "

70th " " 6.2 " " "

80th " " 2.3 " " "

90th " " 0.7 " " "

100th " " 0.001, or about 1 in 1000.

For the purpose of ascertaining whether any influence was exerted by the late epidemic visitation upon the mean duration of human life as formerly determined, we have included a series of ten years in our table. The result of the estimate shows a diminution in the mean duration from that exhibited by our former calculations, which were founded upon data furnished by the fourteen previous years, namely, from 1807 to 1820 inclusive. The average for the last ten years is 28.53, whilst that formerly presented for the period mentioned, was 29.40. In the year 1823, when the greatest mortality occurred, the mean duration fell as low as 26.67. It is not pretended, as we have elsewhere stated, that calculations founded on such data as we possess, can give the mean duration of human life for Philadelphia with precision, one important obstacle to the attainment of which is, that the periods of mortality designated are not sufficiently numerous. It is however the nearest approach that present circumstances will admit us to make towards ascertaining this important point relative to the *laws of mortality.* For the purposes of regulating estimates of risk and adventure, it would we think for several reasons, afford a safe minimum.

The mean duration of life for that portion of inhabitants residing in the more central parts of the town, in good houses, and abundantly provided with all the necessaries of life, must be much above that of the general average for all conditions, including the blacks as well as the poorer class of whites. Now, as these last, though they furnish by far the largest proportion of mortality, and consequently present the greatest risks, seldom apply for life insurance or annuities, it is evident that ventures founded upon estimates of the chances of life in which they are included, must afford great profit, insurance being commonly effected upon that class in which the average value of life is much the greatest.

With regard to the mortality of particular diseases, as exhibited in table F. we have not much to add to what we have already mentioned either on this or the former occasion. It has been shown that fevers, bowel complaints, and inflammations have been much more prevalent within the period included in the present calculations than in that embraced by the preceding. This will perhaps be most strikingly demonstrated thus:—

The average mortality of *fevers*, from 1807 to 1817 inclusive, was in the proportion of 1 in 13, or 7.7 per cent. of the whole mortality. But since that time, and from the year 1818 to 1828 inclusive, the average has been as great as 1 in 7.4, or 13½ per cent. of the whole mortality, nearly double its usual rate.

The average proportion from *bowel complaints* for the same periods has altered but little, notwithstanding the great increase observed in their number since the commencement of the epidemic. For the first mentioned period it was one in 8.3 or 12 per cent. of the total mortality, and for the last, 1 in 8.6 or 11.5 per cent. of the mortality.

The proportional increase in the mortality from *inflammations*, in the last period though more apparent than that of bowel complaints, is much less marked than that of fevers. The average of the first eleven years is 1 in 11.8 or 8.4 per cent.; that of the following eleven years, 1 in 9.9, or 10 per cent. During the last five years, viz. from 1826 to 1830 inclusive, the average has increased so as to constitute 13 per cent. of the entire mortality, which it will be seen is very nearly the proportion of fevers when these were most prevalent.

Of *dropsies*, the average proportion for the first period is 1 in 16, or 6.2 per cent. of the whole mortality, which rate was slightly increased during the last or epidemic period, so as to constitute 1 in 15, or 6.6 per cent. of the entire mortality. During the last five years, which, as already shown, has been distinguished by the prevalence of inflammatory disorders, the proportional mortality from dropsies, has been about equal to what it was during the greatest prevalence of fevers, proving that the agency of both forms of disease in the production of hydropic affections is about equal.

Contrary to what we have found to be the case in regard to the proportional mortality from the last mentioned diseases, that from *consumption*, compared with the general mortality, has rather diminished during the existence of the epidemic influences. Thus we find the average for the eleven years from 1807 to 1818, inclusive, to be 1 in 6.3, or 15 per cent. whilst for the following eleven years, it was as in 6.8, or 14.6 per cent. During the last five years, that is to say, since the subsidence of fevers and increase of inflammatory disorders, the average mortality from consumption, compared to the general

mortality, has been 1 in 6.5, or 15.3 per cent. It must not be forgotten that in estimating these several ratios, the *still-born* were deducted from the yearly sums of mortality; had they been retained, as they often are in such calculations, the proportional mortality of particular diseases would of course appear much less.

Estimates formerly given exhibited the influence of the months and seasons upon the mortality both of adults and children. It was shown from a series of observations including twenty years, how the relative mortality of the months for adults stood, when arranged according to the order of their decreasing mortality. As we did not then show the respective proportions of the months when all made equal to thirty-one days, we now adopt this measure. The result for the twenty years specified is the following order and distribution:—*

| | | | |
|---|---|---|---|
| 1. August | 6632 | 7. April | 4370 |
| 2. July | 5887 | 8. November | 4361 |
| 3. September | 5309 | 9. February | 4283 |
| 4. June | 4699 | 10. January | 4112 |
| 5. October | 4554 | 11. December | 4072 |
| 6. March | 4371 | 12. May | 3892 |

Arranged according to the mortality of adults alone, and supposing them all to consist of thirty-one days, the months placed in the order of their decreasing mortality, would stand thus:—

| | | | |
|---|---|---|---|
| 1. August | 2845 | 7. November | 2432 |
| 2. September | 2716 | 8. July | 2429 |
| 3. April | 2609 | 9. June | 2409 |
| 4. October | 2560 | 10. January | 2390 |
| 5. February | 2501 | 11. December | 2252 |
| 6. March | 2480 | 12. May | 2224 |

The relative mortality of the several months for those under twenty years of age, would stand, according to a similar arrangement, thus:—

| | | | |
|---|---|---|---|
| 1. August | 3787 | 7. March | 1891 |
| 2. July | 3458 | 8. December | 1820 |
| 3. September | 2591 | 9. February | 1782 |
| 4. June | 2290 | 10. April | 1761 |
| 5. October | 1994 | 11. January | 1722 |
| 6. November | 1929 | 12. May | 1668 |

* See Table IV. of our former series of calculations. It may be proper to observe that the present is one of the few instances, in which the still-born have not been deducted in our estimates of mortality. As, however, our object is to show the relative, and not the actual mortality, their exclusion would not have altered the results.

The influence of the seasons in the production of the mortality of both adults and children in our locality, is rendered strikingly conspicuous by this mode of calculation. In the estimates for children, the disparity existing between the months exhibiting the maximum and minimum, or greatest and least proportions of deaths, compared with the difference between the months showing the like proportions for adults, demonstrates most forcibly how much more under the influence of the seasons those in the early periods of life are, than such as have arrived at maturity. With adults the difference in these extremes is only about 21 per cent. whilst that of children is no less than 55 per cent. For the purpose of investigating this interesting subject in still greater detail, we have constructed table H. which exhibits the infantile mortality per month at the respective ages or periods of life. A period of five years was deemed quite ample for this purpose, and instead of returning to the time embraced in our first, we have taken them from the last years of our estimates. The periods designated in our table are four—the first giving the mortality under the first year; the second, that occurring between the first and second years; the third, that between the second and fifth years; and the fourth and last, which embraces no less than fifteen years of life, namely, from the fifth year to the twentieth. The proportion of still-born were deducted from the mortality under the first year.

The months of the five years *equalized* and exhibited in the order of their decreasing mortality, with their respective proportions, stand thus:—

| | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20. | Totals. |
|---|---|---|---|---|---|
| 1. July | 836 | 249 | 117 | 120 | 1322 |
| 2. August | 546 | 317 | 120 | 165 | 1148 |
| 3. Sept. | 377 | 221 | 140 | 185 | 923 |
| 4. June | 510 | 148 | 84 | 105 | 847 |
| 5. February | 382 | 109 | 123 | 131 | 745 |
| 6. October | 324 | 127 | 117 | 153 | 721 |
| 7. March | 322 | 119 | 122 | 138 | 701 |
| 8. April | 342 | 107 | 125 | 122 | 696 |
| 9. Dec. | 269 | 90 | 114 | 135 | 608 |
| 10. Nov. | 267 | 90 | 114 | 132 | 603 |
| 11. January | 281 | 81 | 102 | 109 | 573 |
| 12. May | 250 | 98 | 107 | 107 | 562 |
| | 4706 | 1756 | 1385 | 1602 | 9449 |

It hence appears that by far the greatest mortality occurring in

childhood takes place in July, June, and August, months distinguished from all others by their high temperature, and that heat is the great enemy of early life in our city.* It is interesting to observe that the destructive influence of this agent has lost much of its power after the first year of life, and that after the second year it is scarcely perceptible, there being but little variation in the columns representing the monthly mortality after this period.

If we take the mortality for the months of June, July, and August, we find that the proportion occurring under the second year of infancy is about four times greater than that which occurred during the same months for the whole eighteen succeeding years of life; whereas, for the three months of November, December, and January, the amount of mortality under the two first years of life, is but little above that of the eighteen succeeding years.

It will be observed that the month of September stands among the highest months in the scale of infantile mortality, differing however from those with which it is associated, by having a larger proportion of deaths distributed under the later periods designated.

For the diseases proving most frequently fatal to childhood, with the ages at which they occur, we refer to Table VIII. of our calculations formerly published.

At the time of making our first series of statistical calculations we were so deficient in the data necessary for ascertaining the correct proportion of mortality for the black population separately, that we were compelled as we then stated, to appeal to conjecture for some of them, or abandon the interesting subject entirely. We are now happy to have it in our power to place our estimates upon a better foundation, possessing not only a longer period for observation, but being furnished through the census taken last year with the exact proportion of this class of the population. In Table E. we have exhibited the respective proportions of both white and black mortality and population, with the annual ratio of deaths in each, during the ten years from 1821 to 1830 inclusive. This estimate differs in some respects from the one formerly given, one of which is, that the proportion of still-born has been deducted, a circumstance calculated, as we have before observed, to lessen the rate of mortality compared to population, but to increase the proportion from particular diseases compared with the whole.

* For the average temperature of these and other months in Philadelphia, we refer to Table I. of our former calculations.

The result of our calculations shows a disparity in the proportions of white and black mortality, compared with the population, which though not quite equal to what we had computed it for the five years succeeding 1820, is still most appalling for the African descendants. The greatest mortality among these in any single year was in 1820, when it amounted to 1 death in 16.9 inhabitants. The smallest in 1830, when the ratio was 1 in 27.2. The average for the whole ten years is 1 in 21.7, whilst that for the whites alone during this unusually sickly period is 1 in 42.3. The lowest rate of mortality for the whites occurred in 1821, and was 1 in 49.1 inhabitants, the highest in 1823, when it amounted to 1 in 33.8. We regret exceedingly that the black mortality was not recorded separately for some time previous to 1820, as we should then have been enabled to ascertain its exact proportion in the years when a fever prevailed in some parts of the town, which confined its attacks to the blacks alone, sparing the whites that even lived among them.*

The fact last mentioned is of itself sufficient proof of the existence of some peculiarity in the African constitution, which distinguishes it from that of the white, and when connected with the opposite circumstances of their much greater exemption from some other varieties of fever, to which whites are extremely liable on the application of the causes, as for example, the yellow and even intermittent forms, the evidence is rendered still more positive.

The late Joseph M. Paul, of this city, whose ardent philanthropy was actively directed towards the African race, and who consequently took a particular interest in every thing calculated to shed light upon or ameliorate their condition, undertook the year previous to his death, to trace out the particular diseases which occasioned the mortality of the coloured population. But this tedious task, which consisted in consulting each individual certificate deposited at the Health Office, he was forced by declining health to abandon, after completing only one year, namely, 1827, the tabular view of which, showing the mortality for each week, he had the kindness to transmit to us. The investigation of the sources of the greater mortality of

* Accounts of this singular epidemic may be found in Dr. Jackson's paper in the Philadelphia Journal of the Medical and Physical Sciences, Vol. I. No. II. p. 321, and in Vol. III. No. VI. p. 193, of the same periodical. The disease, which was of a bilious and remittent character with typhoid symptoms, made its appearance in May, and extended with the increase of warm weather, terminating as an epidemic in September. The deaths from it in the Alms-house, whither a great many were carried, were about one in six.

the blacks affords a highly interesting subject, and had time allowed we should have continued the labours commenced by our deceased friend. But this has not been permitted us, and we are consequently obliged to confine ourselves on the present occasion to the results furnished by a very limited period, hoping yet to find leisure to extend the observations so as to include other years, or to see the subject taken up and completed by some other person.

The diseases comprehended in the statement furnished us, with the respective mortality of each, are as follows. The names of some with few or no deaths are retained, to show that the proportion set down to them in the general bills of mortality, must belong for the most part or altogether to the whites. We have adopted the alphabetical order:—

| Diseases. | No. of Deaths. |
|---|---|
| Apoplexy | 2 |
| Catarrh | 7 |
| Cholera | 16 |
| Consumption | 92 |
| Convulsions | 37 |
| Debility | 28 |
| Dropsies | 13 |
| Drowned | 3 |
| Drunkenness | 8 |
| Dysentery and Diarrhœa | 29 |
| Typhus Fever | 34 |
| Other Fevers | 89 |
| Hives | 4 |
| Hooping Cough | 8 |
| Inflammation of the Brain | 0 |
| Inflammation of the Lungs | 9 |
| Carried over | 379 |

| Diseases. | No. of Deaths. |
|---|---|
| Brought over | 379 |
| Insanity | 1 |
| Mania a potu | 3 |
| Measles | 0 |
| Old age | 19 |
| Palsy | 1 |
| Small Pox | 56 |
| Still-born | 38 |
| Sudden | 22 |
| Unknown | 46 |
| Various | 143 |
| Total | 746 |
| Still-born | 38 |
| Exclusive of Still-born | 708 |

From this view it appears, that of the total mortality of the blacks, in the year 1827, namely, 708, exclusive of still-born, the proportion from consumption was 1 in 7.6, or 13 per cent.; from fevers 1 in 5.7, or 17 per cent. which it will be seen, is a much larger proportion than the deaths from fevers bore to the general mortality for the same year, viz. 1 in 10; and from bowel complaints 1 in 15, or 6.3 per cent. The number that died in the alms-house was 155.

The actual proportion of deaths for each month is as follows:

| | | | |
|---|---|---|---|
| 1. January - - - | 52 | 7. July - - - | 62 |
| 2. February - - - | 44 | 8. August - - - | 58 |
| 3. March - - - | 38 | 9. September - - | 63 |
| 4. April - - - | 44 | 10. October - - - | 91 |
| 5. May - - - - | 40 | 11. November - - | 103 |
| 6. June - - - - | 55 | 12. December - - | 96 |

When all made equal to thirty-one days, and arranged according to their decreasing mortality, with their respective proportions, the months assume the following order:—

| | | | |
|---|---|---|---|
| 1. November - - - | 106 | 7. June - - - | 57 |
| 2. December - - - | 96 | 8. January - - - | 52 |
| 3. October - - - | 91 | 9. February - - | 48 |
| 4. September - - | 65 | 10. April - - - | 44 |
| 5. July - - - - | 62 | 11. May - - - | 40 |
| 6. August - - - | 58 | 12. March - - - | 38 |

Of the number 746 actually reported, 401 were males, and 345 females, the deaths of females being about 1 in 14, and of females 1 in 22 of their respective proportions of the population. That the mortality of males should thus be found to exceed that of the females 13 per cent. is a result not to have been expected, when it is considered that the female portion of the black population exceeds the male 32 per cent.

The ages or periods of life at which the mortality occurred are as follows, viz.:—

| | | |
|---|---|---|
| Under 2 years, (still-born excluded) - | 190 | |
| Between 2 and 10 - - - - | 56 | |
| All under 10 - - - - - - | | 246 |
| Between 10 and 20 - - - - - | | 43 |
| All under 20 - - - - - - | | 289 |
| Between 20 and 30 - - - - | 110 | |
| " 30 and 40 - - - - | 113 | |
| " 40 and 50 - - - - | 91 | |
| " 50 and 60 - - - - | 41 | |
| " 60 and 70 - - - - | 25 | |
| " 70 and 80 - - - - | 19 | |
| " 80 and 90 - - - - | 11 | |
| " 90 and 100 - - - - | 6 | |
| 100 and over - - - - | 3 | |
| All over 20 - - - - - - - | | 419 |

The proportion of deaths at particular periods of life compared with the general mortality, may be reckoned thus:—

All under 2 yr's constitute 1 in 3.7 or 28 per ct. of the whole mortality.

| | | | | | |
|---|---|---|---|---|---|
| " | 10 | " | 1 in 2.8 or 34 | " | " |
| " | 20 | " | 1 in 2.4 or 40 | " | " |
| " | 30 | " | 56 | " | " |

In concluding our present statistical labours, we would remark that it has been our object to supply facts of a general character, rather than to pursue details through all their bearings. To have dwelt more minutely upon the many interesting topics developed in the course of our researches, would, we feared, have overcharged the subject, and deterred many from pursuing it, whose partiality for statistical investigations are not very strong. To those fond of such inquiries we have presented abundant materials and left ample room for their employment, as the results we have drawn from the data are only the most prominent that presented themselves. We have seldom indulged in comparisons with other places, and never with our neighbouring cities, our object having been to present facts as they exist, whether these be favourable or unfavourable to the character of our locality for salubrity. Persons who undertake estimates for other places, are often led to the commission of errors, unintentionally of course, from not being acquainted with some local circumstances calculated to affect the results very materially. Such causes have frequently led to mistakes with regard to the proportional mortality of Philadelphia. We have lately seen with some regret a repetition of them in a respectable cotemporary journal, in which the population of Philadelphia is represented about 6400 less than actually exists within the limits of the bills of mortality.* It is needless to add that such an error in the commencement, completely invalidates the whole series of comparative estimates. In such matters, partiality for a favourite city should never be allowed to interfere, and lead to the concealment or palliation of evils where they exist. On the contrary, these should as far as practicable be fully exposed to view, so as to lead when possible, to their removal or correction. Without such an application, medical statistics would lose half their value, and instead of being, as it actually is, a highly practical, sink to the level of a mere speculative branch of knowledge.

* New York Medical and Physical Journal, Vol. I. p. 436.

## TABLE A.

*Abstract from the Census of the City and County of Philadelphia, taken in* 1830, *by order of the General Government, showing the number and description of Inhabitants within the built parts of the town.*

| WARDS AND DISTRICTS. | WHITES. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MALES. | | | | | | | | | | | | | FEMALES. | | | | | | | | | | | | | | | |
| | Under 5 | 5 to 10 | 10 to 15 | 15 to 20 | 20 to 30 | 30 to 40 | 40 to 50 | 50 to 60 | 60 to 70 | 70 to 80 | 80 to 90 | 90 to 100 | 100, &c. | Under 5 | 5 to 10 | 10 to 15 | 15 to 20 | 20 to 30 | 30 to 40 | 40 to 50 | 50 to 60 | 60 to 70 | 70 to 80 | 80 to 90 | 90 to 100 | 100, &c. | TOTAL. |
| City Wards | 4608 | 3557 | 3323 | 4547 | 7589 | 4423 | 2580 | 1374 | 685 | 243 | 84 | 16 | 2 | 4500 | 3847 | 3956 | 4944 | 8763 | 5154 | 2963 | 1833 | 1064 | 438 | 128 | 24 | 5 | 70662 |
| Northern Liberty Wards | 2253 | 1638 | 1423 | 1585 | 2886 | 1627 | 974 | 466 | 268 | 69 | 23 | 1 | 0 | 2185 | 1666 | 1535 | 1674 | 3203 | 1934 | 1096 | 711 | 467 | 183 | 50 | 1 | 1 | 27921 |
| Southwark, and other Incorporated districts. | 4219 | 3965 | 2885 | 2889 | 4646 | 3508 | 1621 | 678 | 298 | 100 | 18 | 6 | 1 | 3853 | 3567 | 2794 | 3172 | 4943 | 3343 | 1715 | 888 | 475 | 163 | 48 | 9 | 1 | 49835 |
| N. Liberties, unincorporated | 183 | 155 | 185 | 134 | 241 | 145 | 97 | 66 | 29 | 5 | 1 | 0 | 0 | 197 | 140 | 152 | 117 | 220 | 130 | 79 | 56 | 34 | 10 | 4 | 0 | 0 | 2380 |
| Penn Township | 197 | 151 | 132 | 152 | 243 | 158 | 89 | 60 | 23 | 9 | 3 | 2 | 0 | 184 | 148 | 141 | 136 | 255 | 138 | 70 | 54 | 35 | 12 | 1 | 1 | 0 | 2401 |
| | 11460 | 9466 | 7948 | 9303 | 15605 | 9861 | 5361 | 2644 | 1303 | 426 | 129 | 25 | 3 | 10919 | 9368 | 8578 | 10040 | 17384 | 10690 | 5923 | 3542 | 2075 | 806 | 231 | 35 | 7 | 153169 |

## TABLE A.—*CONTINUED.*

| WARDS AND DISTRICTS. | BLACKS. | | | | | | | | | | | | | TOTAL WHITES AND BLACKS. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MALES. | | | | | | FEMALES. | | | | | | TOTAL. | |
| | Under 10 | 10 to 24 | 24 to 36 | 36 to 55 | 55 to 100 | 100, &c. | Under 10 | 10 to 24 | 24 to 36 | 36 to 55 | 55 to 100 | 100, &c. | | |
| City Wards | 975 | 1076 | 1092 | 695 | 179 | 8 | 1041 | 1872 | 1606 | 894 | 351 | 7 | 9796 | 80458 |
| Northern Liberty Wards | 119 | 111 | 117 | 71 | 31 | 0 | 135 | 170 | 137 | 79 | 32 | 0 | 1002 | 28923 |
| Southwark, and other Incorporated districts | 436 | 400 | 445 | 318 | 137 | 6 | 446 | 546 | 538 | 288 | 100 | 5 | 3665 | 53470 |
| N. Liberties, unincorporated | 12 | 7 | 10 | 6 | 3 | 0 | 9 | 10 | 6 | 10 | 0 | 0 | 73 | 2453 |
| Penn Township | 7 | 20 | 14 | 7 | 5 | 0 | 8 | 16 | 13 | 9 | 7 | 0 | 106 | 2507 |
| | 1549 | 1614 | 1678 | 1097 | 355 | 14 | 1639 | 2614 | 2300 | 1280 | 490 | 12 | 14642 | 167811 |

## TABLE B.

*Births per annum in Philadelphia, from* 1821 *to* 1830 *inclusive, with the respective proportions of the Sexes.*

| Year. | Males. | Females. | Totals. | Excess of males per annum. | Excess of males per cent. | Proportion of Births to Population. |
|---|---|---|---|---|---|---|
| 1821 | 2630 | 2417 | 5047 | 213 | 8. | Average proportion of births to the population 4.42 per cent. or as 1 to 22.6. |
| 1822 | 3021 | 2701 | 5722 | 320 | 10.5 | |
| 1823 | 2977 | 2836 | 5813 | 141 | 4.7 | |
| 1824 | 3062 | 2771 | 5833 | 291 | 9.5 | |
| 1825 | 3444 | 3182 | 6626 | 262 | 7.6 | |
| 1826 | 3526 | 3219 | 6745 | 307 | 8.7 | |
| 1827 | 3581 | 3452 | 7033 | 129 | 3.6 | |
| 1828 | 3694 | 3506 | 7200 | 188 | 5. | |
| 1829 | 3638 | 3357 | 6995 | 281 | 7. | |
| 1830 | 3996 | 3632 | 7628 | 364 | 9.1 | |
| | 33569 | 31073 | 64642 | 2496 | | |

## TABLE C.

*Exhibiting the Births in Philadelphia, for each month of a series of ten years; namely, from the year* 1821 *to* 1830 *inclusive, designating the numbers of each sex.*

| YEARS. | Jan. | | Feb. | | March. | | April. | | May. | | June. | | July. | | Aug. | | Sept. | | Oct. | | Nov. | | Dec. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. | Males. | Females. |
| 1821 | 245 | 227 | 210 | 186 | 242 | 206 | 180 | 207 | 185 | 167 | 195 | 177 | 209 | 186 | 222 | 218 | 247 | 217 | 225 | 184 | 239 | 212 | 235 | 225 |
| 1822 | 267 | 236 | 285 | 244 | 257 | 232 | 201 | 178 | 230 | 217 | 241 | 182 | 270 | 211 | 242 | 232 | 239 | 242 | 267 | 236 | 297 | 242 | 265 | 222 |
| 1823 | 299 | 266 | 250 | 248 | 238 | 221 | 199 | 201 | 186 | 215 | 201 | 209 | 267 | 246 | 264 | 254 | 279 | 233 | 266 | 260 | 269 | 221 | 253 | 262 |
| 1824 | 279 | 228 | 274 | 242 | 234 | 248 | 224 | 211 | 227 | 193 | 235 | 213 | 259 | 206 | 243 | 205 | 290 | 270 | 296 | 234 | 238 | 238 | 259 | 263 |
| 1825 | 268 | 241 | 290 | 269 | 265 | 281 | 286 | 250 | 276 | 220 | 235 | 235 | 267 | 252 | 303 | 300 | 294 | 265 | 314 | 275 | 272 | 253 | 323 | 314 |
| 1826 | 325 | 297 | 286 | 252 | 349 | 281 | 233 | 196 | 228 | 241 | 181 | 241 | 297 | 273 | 312 | 397 | 285 | 288 | 276 | 250 | 280 | 260 | 329 | 349 |
| 1827 | 307 | 280 | 266 | 267 | 325 | 304 | 246 | 227 | 300 | 254 | 259 | 236 | 287 | 272 | 274 | 286 | 310 | 331 | 331 | 317 | 315 | 309 | 346 | 341 |
| 1828 | 322 | 307 | 320 | 299 | 352 | 325 | 278 | 261 | 286 | 277 | 282 | 264 | 295 | 288 | 338 | 301 | 321 | 295 | 336 | 271 | 328 | 301 | 347 | 318 |
| 1829 | 330 | 293 | 305 | 315 | 324 | 302 | 269 | 246 | 281 | 236 | 249 | 234 | 289 | 249 | 281 | 253 | 262 | 282 | 317 | 281 | 274 | 269 | 328 | 292 |
| 1830 | 370 | 325 | 323 | 303 | 310 | 302 | 318 | 239 | 304 | 274 | 264 | 266 | 324 | 274 | 319 | 293 | 384 | 337 | 313 | 318 | 347 | 306 | 338 | 328 |

## TABLE D.

*An estimate of the proportion of Deaths in the City and Suburbs of Philadelphia to the Population, from the year* 1821 *to* 1830 *inclusive, showing the rate for each year, together with the average of the series.* Note. *Still-born excluded.*

| Year. | Annual Mortality. | Population for each year. | Proportion to Population. | |
|---|---|---|---|---|
| | | | one in | per cent. |
| 1821 | 2961 | 124934 | 42.19 | 2.37 |
| 1822 | 3334 | 129253 | 38.76 | 2.57 |
| 1823 | 4372 | 133721 | 30.58 | 3.26 |
| 1824 | 4284 | 138343 | 32.29 | 3.09 |
| 1825 | 3539 | 143126 | 40.44 | 2.47 |
| 1826 | 3845 | 148073 | 38.56 | 2.59 |
| 1827 | 3659 | 153300 | 41.89 | 2.38 |
| 1828 | 3971 | 158488 | 39.90 | 2.50 |
| 1829 | 4001 | 163960 | 40.99 | 2.44 |
| 1830 | 3948 | 169536 | 42.94 | 2.32 |
| | | | 10) 388.54 | 25.99 |
| | Average mortality per annum | | 38.85 | 2.59 |

## TABLE E.

*An estimate showing the respective Mortality of the White and Coloured portions of the Population of Philadelphia, from the year* 1821 *to* 1830, *inclusive, exhibiting the proportions in each year, and the average for the whole period. Still-born excluded.*

| Year. | Annual Mortality. | | Population for each year. | | Proportion of Deaths to Population, as 1 in | |
|---|---|---|---|---|---|---|
| | Whites. | Blacks. | Whites. | Blacks. | Whites. | Blacks. |
| 1821 | 2320 | 642 | 114065 | 10869 | 49.1 | 16.9 |
| 1822 | 2813 | 521 | 118008 | 11245 | 41.9 | 21.5 |
| 1823 | 3612 | 760 | 122088 | 11633 | 33.8 | 17.5 |
| 1824 | 3598 | 686 | 126308 | 12035 | 35.1 | 17.5 |
| 1825 | 3078 | 461 | 130675 | 12451 | 42.4 | 27.0 |
| 1826 | 3353 | 492 | 135191 | 12882 | 40.3 | 26.1 |
| 1827 | 2954 | 705 | 139963 | 13337 | 47.4 | 18.9 |
| 1828 | 3314 | 657 | 144700 | 13788 | 43.6 | 20.8 |
| 1829 | 3400 | 602 | 149696 | 14264 | 44.0 | 23.7 |
| 1830 | 3405 | 543 | 154737 | 14799 | 45.4 | 27·2 |
| | | | | | 423.0 | 217.1 |
| | | | Average of the ten years | | 42.3 | 21.7 |

## TABLE F.

*Exhibiting the Principal Causes of the Mortality in Philadelphia, for the four years from* 1827 *to* 1830 *inclusive.*

| YEARS. | Whole mortality per annum exclusive of still-born. | Still-born. | Consumption. | Bowel Complaints. | | | Fevers. | | | | | | | | | Inflammations. | | | | | | | | | | | | Total of Inflammations. | Convulsions. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Inflams. of Organs of Respiration and Pleura. | | | | | Inflammations of the Abdominal Cavity. | | | | | | | | |
| | | | | Cholera. | Diarrhœa and Dysentery. | Totals. | Bilious and Remittent. | Inflammatory. | Typhus and Nervous. | Intermittents. | Malignant. | Undesignated. | Totals of the foregoing fevers. | Puerperal. | Hectic. | Scarlet. | Inflam. of Lungs. | Pleurisy. | Bronchitis. | Catarrh. | Totals. | Inflam. of Bowels and Stomach. | Peritoneum. | Liver. | Spleen. | Kidneys. | Bladder. | Uterus. | Totals. | | |
| 1827 | 3659 | 286 | 523 | 239 | 145 | 384 | 133 | 1 | 104 | 14 | 0 | 113 | 365 | 10 | 4 | 1 | 158 | 12 | 23 | 84 | 277 | 99 | 7 | 41 | 1 | 0 | 4 | 0 | 152 | 486 | 268 |
| 1828 | 3971 | 321 | 581 | 290 | 139 | 429 | 173 | 2 | 59 | 21 | 0 | 118 | 373 | 7 | 2 | 0 | 143 | 5 | 27 | 49 | 224 | 125 | 19 | 39 | 0 | 4 | 1 | 1 | 189 | 483 | 315 |
| 1829 | 4001 | 293 | 638 | 257 | 137 | 394 | 106 | 2 | 66 | 12 | 1 | 73 | 260 | 16 | 5 | 9 | 209 | 16 | 37 | 60 | 322 | 127 | 21 | 42 | 0 | 0 | 2 | 6 | 198 | 631 | 269 |
| 1830 | 3948 | 302 | 636 | 236 | 125 | 361 | 81 | 4 | 63 | 9 | 0 | 71 | 228 | 15 | 5 | 40 | 149 | 9 | 46 | 30 | 234 | 132 | 18 | 25 | 1 | 0 | 5 | 1 | 182 | 505 | 306 |

TABLE F.—*CONTINUED.*

| YEARS. | Dropsies. | | | Debility and Decay. | Old age. | Small Pox. | Croup. | Hooping Cough. | Apoplexy. | Sudden. | Measles. | Atrophy, Tabes, and Marasmus. | Gangrene and Mortification. | Sore Throat. | Burns and Scalds. | Hæmorrhages of all kinds. | Cancer and Scirrhus | Asthma. | Colic. | Epilepsy. | Rheumatism. | Syphilis. | Tetanus. | Suicide. | Parturition and Childbed. | Abscess. | Aneurism. | Angina Pectoris. | Aphthæ. | Casualties. | Drowned. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dropsy of Head. | Chest. | Undesignated. | Total. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1827 | 107 | 29 | 83 | 219 | 228 | 76 | 100 | 64 | 51 | 47 | 67 | 9 | 39 | 28 | 9 | 23 | 29 | 24 | 15 | 12 | 10 | 4 | 3 | 10 | 4 | 7 | 8 | 21 | 5 | 0 | 6 | 22 | 46 |
| 1828 | 110 | 46 | 97 | 253 | 302 | 84 | 107 | 71 | 57 | 46 | 55 | 58 | 38 | 23 | 16 | 21 | 23 | 18 | 13 | 6 | 17 | 8 | 7 | 4 | 7 | 9 | 8 | 22 | 7 | 5 | 5 | 19 | 53 |
| 1829 | 147 | 49 | 91 | 287 | 286 | 65 | 81 | 67 | 37 | 51 | 61 | 53 | 31 | 31 | 2 | 16 | 30 | 18 | 16 | 10 | 7 | 6 | 7 | 7 | 8 | 4 | 4 | 25 | 3 | 4 | 6 | 29 | 38 |
| 1830 | 152 | 46 | 84 | 282 | 320 | 65 | 86 | 71 | 35 | 53 | 105 | 7 | 31 | 20 | 17 | 17 | 32 | 27 | 4 | 18 | 9 | 3 | 6 | 6 | 7 | 11 | 14 | 1 | 2 | 2 | 2 | 20 | 41 |

TABLE F. CONTINUED.

| YEARS. | Drunkenness. | Mania a Potu. | Drunkenness and Mania a Potu. | Excessive heat and drinking cold water. | Disease of the Heart. | Disease of the Spine. | Eruptions. | Erysipelas. | Fracture. | Disease of Hip-joint. | Dyspepsia. | Found Dead. | Fungus Hæmatodes. | Gout. | Hernia. | Insanity. | Jaundice. | Palsy. | Laudanum to excess. | Phlegmasia Dolens. | Scrofula. | Stone and Gravel. | Spina Bifida. | Tumours. | Teething. | Ulcers. | Violence. | Wounds. | Unknown. | Variolöid. | Worms. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1827 | 53 | 69 | 122 | 4 | 12 | 4 | 10 | 6 | 5 | 1 | 7 | 23 | 1 | 4 | 5 | 6 | 8 | 31 | 3 | 1 | 22 | 3 | 3 | 10 | 4 | 11 | 1 | 2 | 111 | 0 | 4 |
| 1828 | 30 | 82 | 112 | 10 | 20 | 1 | 6 | 4 | 8 | 1 | 3 | 29 | 4 | 6 | 4 | 17 | 9 | 41 | 9 | 1 | 14 | 2 | 3 | 11 | 7 | 19 | 3 | 4 | 71 | 7 | 4 |
| 1829 | 34 | 94 | 128 | 0 | 29 | 19 | 2 | 9 | 4 | 3 | 4 | 29 | 3 | 4 | 6 | 13 | 9 | 54 | 6 | 0 | 19 | 2 | 0 | 3 | 11 | 12 | 1 | 3 | 89 | 3 | 4 |
| 1830 | 25 | 95 | 120 | 29 | 26 | 0 | 2 | 2 | 7 | 5 | 0 | 1 | 26 | 3 | 4 | 8 | 11 | 8 | 36 | 6 | 2 | 18 | 2 | 8 | 5 | 14 | 16 | 3 | 3 | 76 | 1 | 4 |

## TABLE G.

*The ages or periods of life at which the Deaths in Philadelphia, have occurred in each year of a series of* 10 *years; viz. from* 1821 *to* 1830 *inclusive, together with the average mean duration of life for each year, and for the whole period.*

| Years. | Under 1 year | Between 1 and 2 | Between 2 and 5 | Between 5 and 10 | Between 10 and 15 | Between 15 and 20 | Between 20 and 30 | Between 30 and 40 | Between 40 and 50 | Between 50 and 60 | Between 60 and 70 | Between 70 and 80 | Between 80 and 90 | Between 90 and 100 | Between 100 and 110 | Between 110 and 120 | Whole No. of deaths per an. exclusive of still-born. | Mean duration of life for each year and average. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1821 | 633 | 215 | 193 | 102 | 50 | 88 | 405 | 396 | 324 | 221 | 154 | 97 | 61 | 21 | 1 | 0 | 2961 | 30.14 |
| 1822 | 696 | 243 | 193 | 121 | 78 | 90 | 424 | 441 | 348 | 264 | 217 | 130 | 67 | 18 | 4 | 0 | 3334 | 31.12 |
| 1823 | 854 | 401 | 399 | 184 | 81 | 151 | 537 | 536 | 462 | 312 | 214 | 137 | 76 | 24 | 3 | 1 | 4372 | 26.67 |
| 1824 | 936 | 384 | 364 | 221 | 93 | 162 | 409 | 486 | 435 | 309 | 218 | 177 | 67 | 20 | 3 | 0 | 4284 | 28.04 |
| 1825 | 836 | 250 | 232 | 128 | 58 | 82 | 432 | 479 | 373 | 263 | 171 | 122 | 85 | 24 | 4 | 0 | 3539 | 29.12 |
| 1826 | 844 | 380 | 285 | 134 | 65 | 123 | 429 | 452 | 380 | 271 | 209 | 135 | 98 | 32 | 7 | 1 | 3845 | 29.22 |
| 1827 | 850 | 293 | 215 | 131 | 74 | 128 | 444 | 515 | 364 | 264 | 157 | 131 | 67 | 22 | 4 | 0 | 3659 | 28.85 |
| 1828 | 933 | 395 | 329 | 148 | 70 | 113 | 498 | 459 | 372 | 206 | 191 | 150 | 90 | 12 | 2 | 3 | 3971 | 27.11 |
| 1829 | 965 | 364 | 303 | 158 | 67 | 108 | 477 | 497 | 342 | 266 | 207 | 163 | 65 | 17 | 2 | 0 | 4001 | 27.62 |
| 1830 | 1003 | 325 | 260 | 139 | 75 | 99 | 508 | 518 | 353 | 267 | 195 | 110 | 70 | 24 | 2 | 0 | 3948 | 27.45 |
| | 8550 | 3250 | 2673 | 1466 | 711 | 1144 | 4563 | 4579 | 3753 | 2643 | 1933 | 1352 | 746 | 214 | 32 | 5 | 37614 | 285.34 |
| | | | | | | | | | | | | | | | | | Average mean duration of life | 28.53 |

## TABLE H.

*Showing the Deaths per month that occurred in the early periods of Life, during a series of 5 years, namely from the year 1826 to 1830 inclusive. Still-born excluded.*

| YEARS. | January. | | | | February. | | | | March. | | | | April. | | | | May. | | | | June. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and | Between 5 and 20 |
| 1826 | 49 | 14 | 14 | 22 | 72 | 26 | 22 | 31 | 73 | 31 | 33 | 36 | 99 | 36 | 36 | 28 | 39 | 25 | 31 | 26 | 66 | 34 | 18 | 20 |
| 1827 | 51 | 19 | 18 | 21 | 74 | 23 | 22 | 18 | 74 | 18 | 16 | 12 | 54 | 18 | 14 | 25 | 32 | 16 | 15 | 14 | 106 | 27 | 17 | 19 |
| 1828 | 60 | 14 | 22 | 23 | 61 | 11 | 23 | 23 | 66 | 16 | 18 | 25 | 37 | 18 | 20 | 19 | 55 | 17 | 18 | 19 | 114 | 40 | 11 | 18 |
| 1829 | 59 | 17 | 24 | 19 | 72 | 21 | 23 | 23 | 55 | 28 | 38 | 33 | 75 | 15 | 36 | 25 | 63 | 29 | 25 | 23 | 77 | 24 | 15 | 23 |
| 1830 | 62 | 17 | 24 | 24 | 67 | 18 | 21 | 24 | 54 | 26 | 17 | 32 | 66 | 17 | 15 | 21 | 61 | 11 | 18 | 25 | 131 | 18 | 20 | 22 |
| | 281 | 81 | 102 | 109 | 346 | 99 | 111 | 119 | 322 | 119 | 122 | 138 | 331 | 104 | 121 | 118 | 250 | 98 | 107 | 107 | 494 | 143 | 81 | 102 |
| Totals per mo. | 573 | | | | 675 | | | | 701 | | | | 674 | | | | 562 | | | | 820 | | | |

## TABLE H. CONTINUED.

| YEARS. | July. | | | | August. | | | | September. | | | | October. | | | | November. | | | | December. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 | Between 5 and 20 | Under 1 year. | Between 1 and 2 | Between 2 and 5 |
| 1826 | 157 | 63 | 32 | 21 | 105 | 55 | 16 | 25 | 51 | 35 | 21 | 50 | 43 | 21 | 28 | 32 | 47 | 19 | 15 | 25 | 41 | 10 | 19 |
| 1827 | 150 | 36 | 22 | 30 | 101 | 47 | 15 | 43 | 58 | 38 | 22 | 29 | 61 | 14 | 18 | 24 | 44 | 15 | 24 | 33 | 54 | 14 | 25 |
| 1828 | 195 | 65 | 22 | 26 | 100 | 71 | 44 | 36 | 73 | 40 | 30 | 47 | 64 | 34 | 31 | 41 | 64 | 20 | 34 | 23 | 67 | 20 | 22 |
| 1829 | 135 | 34 | 14 | 18 | 123 | 79 | 29 | 27 | 97 | 60 | 32 | 30 | 84 | 25 | 25 | 36 | 52 | 15 | 20 | 25 | 55 | 23 | 23 |
| 1830 | 199 | 51 | 27 | 25 | 117 | 65 | 16 | 34 | 86 | 41 | 31 | 23 | 72 | 33 | 15 | 20 | 52 | 18 | 17 | 22 | 52 | 23 | 25 |
| | 836 | 249 | 117 | 120 | 546 | 317 | 120 | 165 | 365 | 214 | 136 | 179 | 324 | 127 | 117 | 153 | 259 | 87 | 110 | 128 | 269 | 90 | 114 |
| Totals per mo. | 1322 | | | | 1148 | | | | 894 | | | | 721 | | | | 584 | | | | 608 | | |

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